# **Attachment B:**

# **Photographs**

- I. Photographs of features identified and discussed in the report
- **II.** Geo-referenced Photographic Record

## **Attachment B:**

## **Photographs**

# I. Photographs of features identified and discussed in the report

- A. Photo Locations
- **B. Featured Photos**

#### PHOTO LOCATION MAP



#### FEATURED PHOTOGRAPHS



Photo 70: Left bank height (11') between MD 464 Bridge and existing bridge abutment. This vertical bank is composed of legacy sediments and is typical of the banks found throughout the site.



Photo 109: Bedrock outcrop on west (right) bank directing flows to the left.



Photo 37: Bedrock with bore hole indicating blasting activity in this region of Catoctin Creek.



Photo 121: High bank, low depositional features.



Photo 83: Scour at Pier B and deposition in the B-C span.



Photo 67: Looking upstream, old bridge abutment (with 5.5' deep scour hole) on right receiving majority of flow redirected by MD 464 Pier D



Photo 101: Approach flows constricted by 6' high stone mill dam on right (in vegetation) and high banks with debris jam on left.



Photo 59: Channel movement, low depositional feature.



Photo 133: Top of B-C span looking upstream. Mill dam is in vegetation.



Photo 96: Stone mill dam extending from right bank to wall at Pier D.



Photo 56: Mill building and tailrace.



Photo 91: Broken stone wall and grout bags at upstream wall of Pier D.



Photo 89: Scour hole (4.5' deep) and grout bags (left) at Pier D.



Photo 69: Scour hole (>5.5' deep) at old bridge abutment.



Photo 85: Looking downstream from center of C-D span.



Photo 4: Degraded local base level point downstream of MD 464 Bridge.



Photo 12: High vertical banks (9') consisting of laminated sediments.



Photo 22: Layers of fine laminated sediments (top), grey/blackish organic material (middle) and quartz gravel (bottom).



Photo 74: Remnants of stone mill dam compose substrate for LFHG feature at MD 464 Bridge.



Photo 104: Vertical banks (10') composed fine laminated sediments.



Photo 89: Looking downstream, scour hole at retaining wall above Pier D, pool depth 4'.



Photo 68: Looking upstream, deposition occurs throughout spans A-B, B-C, and C-D.



Photo 92: Debris collected at wall in front of Pier D.



Photo 107: Approach flow direction and 10' high stream banks on either side. Note bedrock outcrop on right bank.



Photo 19: Quartz gravel forming LFHG feature.



Photo 112: Left bank height 10'.

## **Attachment B:**

## **Photographs**

## **II.** Geo-referenced Photographic Record

A. Photo Index

## **PHOTO INDEX**

	GPS Point	LA	TITU	UDE	3	LC	ONG	ITU	DE	
Photo No	No	0		"		0				Description
1	1	39 1	9 4	10	N	77	33	45	W	Downstream of degraded local base point with exposed bedrock along hillslope and bar formation.
2	2	39 1	9 4	10	N	77	33	45	W	Bar material consists of broken bedrock cobble with quartz gravel
3	3	39 1	9 4	10	N	77	33	45	W	Excosed beforek on left bank at degraded local base level point, island on right.
4	4	39 1	9 4	10	N	77	33	45	W	Upstream view of low-flow high gradient-feature (LFHG). Degraded local base point with exposed bedrock showing signs of weathering. Island shown on right.
5	5	39 1	9 4	12	N	77	33	47	W	Bottom of LFHG at local degraded base level point, island on right.
6	6	39 1	9 4	12	N	77	33	47	W	Bar material.
7	7	39 1	9 4	17	Ν	77	33	50	W	Upstream of LFHG feature looking downstream, island in middle.
8	8	39 1	9 4	18	Ν	77	33	48	W	Looking up tributary, pool depth at confluence 3.5'.
9	9	39 1	9 4	18	Ν	77	33	48	W	Bar material in tributary, quartz gravel and broken bedrock.
10	10	39 1	9 4	18	Ν	77	33	48	W	Looking upstream in tributary, ford shown leading to junkyard.
11	11	39 1	9 4	17	Ν	77	33	50	W	Looking upstream Catoctin Creek at confluence.
12	12	39 1	9 5	51	Ν	77	34	0	W	Looking at left bank, fine laminated sediments, 9' bank height.
13	13	39 1	9 5	51	Ν	77	34	0	W	Looking downstream, stream along right valley wall.
14	14	39 1	9 4	19	Ν	77	33	58	W	Looking at bedrock outcrop on right bank, pool depth 2.4'.
15	15	39 1	9 5	51	Ν	77	34	0	W	Rebar in legacy sediment, resistance met at 3' below water surface.
16	16	39 1	9 5	51	N	77	34	0	W	Clay material 2' below water surface.
17	17	39 1	9 5	53	N	77	34	4	W	Bottom of second LFHG feature looking downstream.
18	18	39 1	9 5	53	N	77	34	4	W	Bottom of LFHG feature looking upstream.
19	19	39 1	9 5	53	N	77	34	4	W	Quartz gravel forming LFHG feature.
20	20	39 1	9 5	03	IN N	11	34	4	W	Quartz par materiai.
21	21	39 1	9 5	22	IN N	11	34	4	W	Looking at lett bank, quartz gravel layer below 8 of the laminated sediments.
22	22	39 1	9 3 0 4	55	IN N	11	24	4	W	Organic pre-sententent noodplam just above quartz gravet layer.
23	23	39 1	7 2	55	IN N	11	24	0	W W	Looking upsucain at second LFTO leadure.
24	24	39 I 30 I		56	IN N	11	34	9	W	Det stusstate forming Second LENG feature looking unstream
25	25	30 1	2 2	56	N	11 77	34	9	VV VV	Tributary with bridge and old shutment on right
20	20	30 1	0 5	57	N	77	34	10	W	Inoutary wint of loge and our adouter of right.
28	27	39 1	9 5	58	N	77	34	13	W	Devise downstraam with bednetk.
20	20	39 1	9 5	58	N	77	34	13	W	Looking downsidean at before outero on refroans, 5.5 poor depin.
30	30	39 1	9 5	59	N	77	34	16	w	Looking at which will be subtrate
31	31	39 1	9 5	58	N	77	34	17	W	Quarto guiravels har material
32	32	39 1	9 5	58	N	77	34	15	W	Looking downstream at bottom third of LFHG feature
33	33	39 1	9 5	58	N	77	34	15	W	Looking upstream at third LFHG feature.
34	34	39 1	9 5	58	Ν	77	34	17	W	Middle of third LFHG feature, looking upstream.
35	35	39 1	9 5	57	N	77	34	19	W	Looking downstream at top of third LFHG feature.
36	36	39 1	9 5	58	Ν	77	34	17	W	Looking upstream at bedrock within third LFHG feature.
37	37	39 1	9 5	57	Ν	77	34	19	W	Bore hole in bedrock.
38	38	39 1	9 5	57	Ν	77	34	19	W	Bore hole in bedrock.
39	39	39 1	9 5	57	Ν	77	34	19	W	Fracturing and weathering occurring in bedrock along right bank.
40	40	39 1	9 5	57	Ν	77	34	19	W	Top of third LFHG feature, looking upstream.
41	41	39 1	9 5	56	Ν	77	34	20	W	Looking at left bank, pool depth 2.0' bank height 11'.
42	42	39 1	9 5	57	Ν	77	34	30	W	Looking at left bank, pool depth 1.3' bank height 12'.
43	43	39 1	9 5	57	N	77	34	30	W	Left bank, low soil formation.
44	44	39 1	9 5	57	N	77	34	30	W	Possible pre-settlement floodplain, resistance 1.3' below water surface.
45	45	39 1	9 5	57	N	77	34	30	W	Looking downstream, bar on right.
46	46	39 1	9 5	56	N	77	34	29	W	Bar heght 1.2'.
4/	47	39 1	9 5	50	IN N	11	34	30	W	Bar material, quartz grāvels. Loging damentegen is badrode outeren og sjobt hogie og den formetige og left hogie
48	48	39 1	9 5		IN N	11	34	30	W	Looking downstream, bedrock outcrop on right bank and bar formation on left bank.
49	49	39 I 30 I		55	IN N	11	34	31	W	Looking at right vanks, pool ucput 4.3.
51	51	30 1		55	IN N	11	34	30	W W	Li Tito reaute substate, qualtz giavels.
52	52	30 1		55	N	, / 77	34	36	VV XX/	La flor feature substatic, qualiz glavis. Bar formation by IFIC feature
53	53	30 1	$\frac{2}{9}$	55	N	77	34	36	W	Bar material fracticed bedrock
53	54	39 1	95	55	N	77	34	40	W	Bar heidel 17'
55	55	39 1	9 5	55	N	77	34	33	w	Looking downstream from Millrace confluence
56	56	39 1	9 5	55	N	77	34	33	W	Howing downardan for white confidence.
57	57	39 1	9 5	55	N	77	34	33	W	Looking upstream from Millrace confluence.
58	58	39 1	9 5	56	N	77	34	32	W	Left bank bar formation immediately below Millrace confluence.
59	59	39 1	9 5	56	N	77	34	33	W	Bar width $= 65^{\circ}$ , stream width $= 40^{\circ}$ .
60	60	39 1	9 5	55	N	77	34	35	W	Bottom of LFHG 4 looking downstream.
61	61	39 1	9 5	55	Ν	77	34	35	W	Looking upstream at LFHG feature 5.
62	62	39 1	9 5	54	Ν	77	34	37	W	Looking downstream at armored LFHG feature 5 composed of fractured bedrock.
63	63	39 1	9 5	54	N	77	34	37	W	Looking upstream of LFHG feature 5.
64	64	39 1	9 5	55	Ν	77	34	41	W	Looking downstream from bottom of LFHG feature 6 with stream along right valley wall.
65	65	39 1	9 5	55	Ν	77	34	40	W	Exposed roots and fractured bedrock.
66	66	39 1	9 5	55	Ν	77	34	40	W	Looking upstream at exit conditions of MD 464 bridge.
67	67	39 1	9 5	56	Ν	77	34	42	W	Top of LFHG looking upstream at exit conditions of bridge.
68	68	39 1	9 5	56	N	77	34	42	W	Looking upstream, old bridge abutment obstructs exit flows.
69	69	39 1	9 5	57	N	77	34	43	W	Scour pool at old bridge abutment, pool depth >5.5'
70	70	39 1	9 5	57	N	77	34	43	W	Lett bank height 11' downstream of MD 464 bridge upstream of old abutment.
71	71	39 1	9 5	56	Ν	77	34	42	W	High depositional feature downstream of B-C span.

## PHOTO INDEX (continued)

72	72	39 1	9 5	56	Ν	77	34	4	42	W Looking upstream at A-B span, high bank encroaches on flow.
73	73	39 1	9 5	56	Ν	77	34	4	42	W Looking upstream at Pier B and high sediment deposit.
74	74	39 1	9 5	57	N	77	34	4	43	W Span C-D, looking upstream.
75	75	39 1	9 5	56	N	77	34	4	42	W Looking upstream to C-D span, Justin standing on stone mill dam. Dam height is 6', obstructing flows entering the C-D span.
70	70	39 1	9 2	50	IN N	77	34	4	43	W Broken dam matter forms HGLP 0 at bridge.
78	78	39 1	9 5	57	N	77	34	+ 4   4	+3 13	W Looking upsiteani at D-E spai, nigi toani separates Miniace non sireani.
79	79	39 1	9 4	56	N	77	34	1 4	45	W Looking dwnstream from center of A-B snan high bank obstructs high flow
80	80	39 1	9 5	56	N	77	34	4	45	Looking unstream from center of A-B span. Looking unstream from center of A-B span.
81	81	39 1	9 5	57	Ν	77	34	4	44	W Looking downstream from center of B-C span.
82	82	39 1	9 5	57	Ν	77	34	4	44	W Looking upstream from center of B-C span.
83	83	39 1	9 5	57	Ν	77	34	4	46	W Scour at Pier B and deposition in the B-C span.
84	84	39 1	9 5	57	Ν	77	34	4	46	W Looking upstream from center of C-D span. 6' stone mill dam not visible due to vegetation.
85	85	39 1	9 5	58	N	77	34	4	44	W Looking downstream from center of C-D span.
86	86	39 1	9 5	58	N	77	34	4	44	W Looking upstream from center of D-E span.
8/	8/	39 1	9 2	00 10	IN N	77	34	+ 4	44 47	W Looking odwistream from center of D-E span. Militace visible on lett.
89	89	39 1	9 4	58	N	77	34	ι 4	+4 13	W Looking at concrete wait induct in the vegetation at D-E Span.
90	90	39 1	9 5	58	N	77	34	4	44	W Grout bas for scour protection at Pier D.
91	91	39 1	9 5	58	Ν	77	34	4	44	W Broken stone wall and grout bags at upstream wall of Pier D.
92	92	39 1	9 5	58	Ν	77	34	4	46	W Debris collected at wall in front of Pier D.
93	93	39 1	9 5	58	Ν	77	34	4	44	W Remnants of stone mill dam that previously extended wall upstream of Pier D.
94	94	39 1	9 5	57	Ν	77	34	4	46	W Rock dam immediately upstream of bridge extends from right valley wall to more than ½ of C-D span.
95	95	39 1	9 5	58	Ν	77	34	4	44	W Remnants of corduroy road immediately upstream of bridge.
96	67	20.		- 0		77		+	10	Stone mill dam extending from right bank to wall at Pier D.
97	97	39 1	9 5	8	N	77	34		46 4.4	W Looking downstream, wall at Pier D and debris obstruct flow to left, dam on right obstructs flows up to 6' in depth.
98	98	39 1	9 3	58	IN N	77	34	+ 4   1	44 16	Looking upsucan noine ind or scone min dani. Looking upsucan noine ind or scone min dani. Work graval har material upsucan materi
100	100	39 1	9 4	58	N	77	34	ι 4	+0 16	W Looking unstream of dam at nool
100	100	39 1	9 5	58	N	77	34	4	46	V Looking downstream at dam and deposition upstream of dam.
102	102	39 1	9 5	58	Ν	77	34	4	46	W Low bank feature on left bank composed of fine sediments and clay.
103	103	39 2	20	0	Ν	77	34	4	47	W Rebar driven to resistance, pool depth = 2.2', rebar 3.8' below WS.
104	104	39 1	9 5	58	Ν	77	34	4	46	W Left bank 10' high.
105	105	39 1	9 5	59	Ν	77	34	4	47	W Looking upstream at depositional bar on left bank and bedrock outcrop on right bank.
106	106	39 1	9 5	59	N	77	34	4	47 50	W Quartz gravels on bar.
107	107	39 2	20	1	N	77	34	1 3	50 40	W Looking downstream, stream against bedrock outcrop along valley wall.
108	108	39 2	20	1	N	77	34	+ 4   4	+9 10	w becarect on right bank directing flow to left.
110	110	39 2	20	1	N	77	34	1 5	+9 50	W Looking unstream at mid-channel har and vertical left bank
110	110	39 2	20	5	N	77	34	1 5	52	W Pebble court LFHG feature, looking at left bank.
112	112	39 2	20	5	Ν	77	34	1 5	52	W Left bank height 10'.
113	113	39 2	20	5	Ν	77	34	1 5	52	W Low bank feature.
114	114	39 2	20	5	Ν	77	34	1 5	52	W Pre-settlement layer 1.6' below water surface.
115	115	39 2	20	5	Ν	77	34	1 5	52	W Headcut migrating upstream, 1.6' below water surface.
116	116	39 2	20	5	N	77	34	1 5	52	W Looking downstream of pebble count LFHG feature.
117	117	39 2	20	5 0	N	77	34	1 5	52	W Large particle size from mid-channel bar.
118	118	39 2	20	8 0	IN N	77	34		50	W Mid-channel bar formation.
120	120	39 2	20	5	N	77	34	1 5	52	W Looking unstream of pebble count LFHG feature.
120	120	39 2	20	5	N	77	34	1 5	52	W Bar width = 85', stream width = 25'.
122	122	39 1	9 5	55	N	77	34	4	46	W Riprap armor along right bank, protecting road.
123	123	39 2	20	5	Ν	77	34	1 5	52	W Rebar driven to resistance, water depth = $0.4$ ', rebar = $2.0$ '.
124	124	39 2	20 1	0	Ν	77	34	1 5	53	W Looking downstream at LFHG feature.
125	125	39 2	20 1	0	Ν	77	34	1 5	53	W Looking upstream, stream along east valley wall.
126	126	39 2	20 1	0	N	77	34	1 5	53	W Bedrock on East (left) bank.
127	127	39 2	20 1	10	N	77	34		53	W Bedrock on East (left) bank.
128	128	30 1	9 5	56	IN N	11	34	1 2	+0 3/1	w   western approach tooking eastbound.
129	129	39 1	9 4	56	N	77	34	1 3	34	W Center of Bridge looking westbound
130	130	39 1	9 5	56	N	77	34	1 3	34	W Top of A-B span looking upstream.
132	132	39 1	9 5	56	N	77	34	1 3	34	W Top of A-B span looking downstream.
133	133	39 1	9 5	56	Ν	77	34	1 3	34	W Top of B-C span looking upstream. Mill dam is in vegetation.
134	134	39 1	9 5	56	Ν	77	34	1 3	34	W Top of B-C span looking downstream at old bridge abutment.
135	135	39 1	9 5	57	Ν	77	34	4	44	W  Top of C-D span looking upstream.
136	136	39 1	9 5	57	N	77	34	4	44	W Top of C-D span looking downstream.
137	137	39 1	9 5	7	N	77	34		43	W 10p of D-E span looking upstream.
138	138	59 ]	9 5	)/	IN	Π	34	+ 4	+3	W 10p of D-E span looking downstream, Millrace shown at pink ribbon.
139		++	+	+				+		Unstream of bridge looking downstream at Pier D and Abutment F
140							1	1		opstoun of orage looking downstroan at 1 of D and Abathent L.